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means for forming a ceramic film having a predetermined thickness including means for feeding at least one of an electromagnetic wave and active species of a substance which is at least part of raw materials for the ceramics to a predetermined region. --

REMARKS

Claims 11-49 and 52-56 are pending herein. By this Amendment, claims 1-10 are cancelled and new claims 52-56 are added. Support for new claims can be found, for example, in the claims (e.g., claims 37), as originally filed, and the specification at page 21, line 13, to page 22, line 6. Support for new claim 56 can be found in claims 11 and 41 as originally filed. Thus, Applicant submits that this amendment does not introduce new matter.

I. Restriction/Election

Applicant submits that at least Groups I and II should be examined together. According to MPEP §803, there are two requirements that must be met before a proper Restriction Requirement may be made. These two requirements are: "inventions must be independent...or distinct as claimed; and there must be a serious burden on the Examiner if restriction is not required..." (emphasis added).

Applicant respectfully submits that the Office Action has failed to establish the second requirement as set forth in MPEP §803, that a serious burden exists on the Examiner if restriction is not requirement between Groups I and II. In the present application, Applicant respectfully submits that a proper search of the claims of Group I would require a search of the claims of Group II since references drawn to the method of fabricating ceramics of Group I would be expected to describe the ceramics fabrication device of Group II. Accordingly, a search and examination of the subject matter of Group I would encompass a search for subject matter of Group II, and any additional search would not impose a serious burden upon the Examiner.

It is therefore respectfully asserted that the search and examination of the entire application could be made without serious burden. MPEP §803 states that "if the search and examination of the entire application can be made without serious burden, the Examiner must examine it on the merits even though it includes claims too distinct or independent inventions" (emphasis added). Because Applicant has elected Group I directed to a method of fabricating ceramics, the further search and examination of Group II, directed to a ceramics fabrication device, would not place a serious burden on the Examiner.

Furthermore, new claim 56 is added, which Applicant submits is a linking claim that links Groups I and II, because claim 56 specifies means in an apparatus for carrying out the process of claim 11. Because the elected process claims are allowable for the reasons discussed below, Applicant submits that the linking claim, which incorporates means for practicing the claimed invention is also allowable and that the apparatus claims must be rejoined. See MPEP §806.05(e). For at least these reasons, and in order to avoid unnecessary delay and expense to Applicant and duplicative examination by the Patent Office, it is respectfully requested that the Restriction Requirement be reconsidered and withdrawn.

II. Rejections under §102

A. Naoko et al. (JP 11-193472)

Claims 1-3, 23-25 and 35 are rejected under 35 U.S.C. §102(b) as allegedly anticipated by Naoko. In view of the cancellation of claims 1-10, the rejection is moot with respect to the cancelled claims. Applicant respectfully traverses this rejection as it applies to the pending claims.

Naoko discloses a method of coating the surface of an object with a precursor coating solution of a metallic oxide containing the alkoxide salt of a transition metal as a starting raw material to form the coating film. The coating film of the precursor solution is then irradiated

with UV light having a wavelength of at least 360 nm to crystallize the transition metal oxide of the coating film.

Nonetheless, Naoko fails to disclose a method in which at least one of an electromagnetic wave and an active species that is at least part of the raw materials for forming the ceramic layer is fed to a predetermined region of the substrate, i.e., to only a part but not to all of the substrate. By feeding at least one of the electromagnetic wave and the active species to the predetermined area, the intensity of the electromagnetic wave can be increased without causing the temperature of the object to increase. In contrast, the cited reference discloses coating the entire surface, not just a pre-determined region, of the substrate and fails to disclose anything about feeding the electromagnetic wave and active species to only a predetermined region of the substrate. In addition, Naoko also fails to disclose that the process steps are repeated several times to fabricate the claimed film. Thus, the reference fails to disclose each and every feature of the claimed invention.

In view of the above remarks, Applicant submits that the reference does not anticipate the claimed invention. Reconsideration and withdrawal of the rejection are respectfully requested.

Applicant submits that new claims 52-55 are also allowable over the cited reference because the cited reference fails to disclose the formation of film forming regions and non-film-forming regions on the surface of the substrate and forming the ceramic layer in the film forming regions of the substrate.

B. Narwankar et al. (US 6,204,203)

Claims 1-4, 6, 8-18, 20-25, 27, 29 and 31-40 are rejected under 35 U.S.C. §102(b) as allegedly anticipated by Narwankar. In view of the cancellation of claims 1-10, the rejection is moot with respect to the cancelled claims. Applicant respectfully traverses this rejection as it applies to the pending claims.

Narwankar discloses a method of forming a metal oxide dielectric film. According to the method disclosed by Narwankar, an amorphous metal oxide dielectric film is deposited over a substrate and is then annealed by heating the substrate in an inert ambient to convert the amorphous metal oxide dielectric to a polycrystalline metal oxide dielectric.

As discussed above with respect to Naoko, Narwankar also fails to disclose a method in which at least one of an electromagnetic wave and an active species that is at least part of the raw materials for forming the ceramic layer is fed to a predetermined region of the substrate, i.e., to only a part but not all of the substrate. By feeding at least one of the electromagnetic wave and the active species to the predetermined area, the intensity of the electromagnetic wave can be increased without causing the temperature of the object to increase. However, in the process disclosed by Narkwankar the entire surface of the substrate is crystallized in order to drive out contaminants, such as carbon, from the dielectric layer (see col. 7, line 63, to col. 8, line 16). The annealing process disclosed in Narwankar is performed by heating the substrate to a temperature between 750°-850°C in an inert ambient (see col. 8, lines 26-29).

Applicant respectfully submits that Narwankar does not disclose forming the layer in only a predetermined region of the substrate. In addition, the reference also fails to disclose that the process steps are repeated several times to fabricate the claimed film. Instead, Narwankar discloses treating the entire surface of the substrate and does not disclose that the process is to be repeated several times in forming the coating film. Thus, the reference fails to disclose each and every feature of the claimed invention.

In view of the above remarks, Applicant submits that the reference does not anticipate the claimed invention. Reconsideration and withdrawal of the rejection are respectfully requested.

Applicant submits that new claims 52-55 are also allowable over the cited reference because the cited reference fails to disclose the formation of film forming regions and non-film-forming regions on the surface of the substrate and forming the ceramic layer in the film forming regions of the substrate.

III. Rejections under §103

A. Naoko in view of Katsuto (JP 05-343642)

Claims 4 and 27 are rejected over Naoko in view of Katsuto (JP 05-343642). In view of the cancellation of claims 1-10, the rejection is moot with respect to the cancelled claims. Applicant respectfully traverses this rejection as it applies to the pending claims.

The Office Action cites and applies Naoko as discussed in the §102 rejection above. However, the Office Action admits that Naoko fails to teach or suggest forming the first ceramic film in an amorphous state. To cure this deficiency in the teaching of Naoko, the Office Action cites Katsuto. The Office Action cites Katsuto for teaching the formation of an amorphous dielectric film on a substrate that is later irradiated to form a crystallized film using ultraviolet rays.

Nonetheless, the citation of Katsuto fails to cure the additional deficiencies in the teachings of Naoko as discussed above. Thus, the citation of Katsuto fails to teach or suggest that at least one of an electromagnetic wave and an active species that is at least part of the raw materials for forming the ceramic layer is fed to a predetermined region of the substrate. Katsuto also fails to teach or suggest that the process is repeated several times in order to form a film layer having the desired thickness. Thus, one of ordinary skill in the art would not have been above to derive the claimed invention based on the teachings of the cited references.

For at least these reasons, claims 4 and 27 would not have been obvious over the cited references. Reconsideration and withdrawal of the rejection are respectfully requested.

Applicant submits that new claims 52-55 are also allowable over the cited references because the cited references fail to disclose the formation of film forming regions and non-film-forming regions on the surface of the substrate and forming the ceramic layer in the film forming regions of the substrate.

B. Narwankar in view of deRochemont et al. (US 6,027,826)

Claims 6-8, 20-22, 26, 29-31 and 39 are rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Narwankar in view of deRochemont. In view of the cancellation of claims 1-10, the rejection is moot with respect to the cancelled claims. Applicant respectfully traverses this rejection as it applies to the pending claims.

The Office Action cites and applies Narwankar as discussed in the §102 rejection above. However, the Office Action admits that Narwankar fails to teach or suggest that the active species is a radical or an ion obtained by activating a substance containing nitrogen or oxygen. To cure this deficiency, the Office Action cites deRochemont.

Nonetheless, the citation of deRochemont fails to cure the deficiencies identified in Narwanker discussed above, namely that the at least one of an electromagnetic wave and an active species that is at least part of the raw materials for forming the ceramic layer is fed to a predetermined region of the substrate. Furthermore, deRochemont fails to teach or suggest that the process is repeated several times. Thus, one of ordinary skill in the art would not have been able to derive the claimed invention based on teachings of Narwankar and deRochemont.

For at least these reasons, claims 6-8, 20-22, 26, 29-31 and 39 would not have been obvious over the cited references. Reconsideration and withdrawal of the rejection are respectfully requested.

Applicant submits that new claims 52-55 are also allowable over the cited references because the cited references fail to disclose the formation of film forming regions and non-

film-forming regions on the surface of the substrate and forming the ceramic layer in the film forming regions of the substrate.

IV. Conclusion

In view of the foregoing amendments and remarks, Applicant submits that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the pending claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in better condition for allowance, the Examiner is invited to contact Applicant's undersigned representative at the telephone number set forth below.

Respectfully submitted,


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AUTHORIZATION
Please grant any extension
necessary for entry;
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APPENDIX

Changes to Claims:

Claims 1-10, 50 and 51 are canceled.

Claim 52-56 are added.